

lines owned by the Lancaster Company. A portion might go down to Holtwood and thence go to Lancaster or York or Baltimore.

Q. In other words, there is a path of flow to the railroad directly from Safe Harbor. Is that right? A. Yes, sir.

Q. And to Pennsylvania Power and Light Company for its Lancaster Division there are two paths of flow—one, directly [1865] to Safe Harbor and the other by way of Holtwood. Is that right? A. Yes, sir.

Q. And you are saying that the flow to the Lancaster Division could have gone at times directly and at times through Holtwood. Is that it? A. Yes.

Q. And the supply to the railroad that went directly from Safe Harbor, that was for the account of what company? A. That I don't know. I am speaking now only of the flow of supply technically and not legally.

Q. Isn't it a fact that Safe Harbor's facilities do not connect directly with the railroad? A. Yes, sir.

[1867] Q. In 1939 would it be fair to say that you were fully equipped, based upon your experience and qualifications, to express a factual opinion as to what Pennsylvania Water and Power Company was engaged in doing? A. I think so, in general.

[1868] Q. It was with that knowledge and information that you reviewed that application from a factual viewpoint, not intending to review it from a legal viewpoint. Is that right? A. Yes, sir.

Q. And in reviewing it from a factual viewpoint you found nothing in it which would cause you to take any exception to the statements in the application—right? A. I don't recall that I found any.

Q. In 1939 Holtwood had the contract known as Items "E", "F" and "G"—right? A. Yes, sir.

Q. Same one it has today—right? A. Yes, sir.

Q. It had the contract known as Items "H" and "I"—right? A. Yes, sir.

Q. The same one it has today? A. Right.

Q. It had in 1939 all of the contracts that it had up to the end of 1945, namely; the Lancaster, Coatesville, and York Edison supply contracts—right? A. Yes, sir.

Q. The only change which has taken place since that time is the supersession of the York contract by the new one between Penn Water and Metropolitan Edison—is that right? [1869] A. Yes, and a new one, Pennsylvania Railroad.

Q. I am sorry. I keep forgetting that one, because I have said in this case I am making no assertions with respect to that agreement. But it had that one in 1939? A. Yes, sir.

Q. And it has it today? A. Yes, sir.

[1870] Q. Reviewing the statements in the application entirely from a factual viewpoint, based upon your knowledge of the operations of Pennsylvania Water and Power Company at that time, you found no reason to take exception to the statement in the application that applicant, meaning Penn Water, does no "retail distribution business"—right? A. Yes, sir.

Q. And you found no reason to take exception to the statement that "With one exception all of applicant's power and energy is sold at wholesale to public utility companies who resell and distribute the same." Is that right?

THE WITNESS: The first part of the question, please? (Question read.)

THE WITNESS: No, sir, remembering, of course, my qualifications as to energy and sales.

By MR. GOLDBERG:

Q. Yes. How could I forget that, Mr. Walls?

Incidentally, that paragraph went on to name the companies that were referred to as the companies to whom

the sales were made, and they were named as Pennsylvania Power and Light Company, Edison Light and Power, Philadelphia Electric Company, and Consolidated of Baltimore—right? A. Yes, sir.

Q. And also reference was made to the fact that the company at that time had certain interchange agreements [1871] relating to economy, power and energy flow with Pennsylvania Power and Light and Philadelphia Electric Company and Metropolitan Edison Company. A. Yes, sir.

Q. Just to make it complete, not overlooking our friend the Pennsylvania Railroad Company, it went on to say that Pennsylvania Water sells power and energy to the Pennsylvania Railroad at Safe Harbor—right? A. That includes Pennsylvania Railroad; yes, sir.

Q. In that application the company undertook to describe for the Commission the facilities which it referred to as facilities owned and/or operated by Pennsylvania Water and Power Company for transmission of electric energy in interstate commerce and for the sale of electric energy at wholesale energy in interstate commerce. Is that so? A. It does show that.

Q. It undertook to describe the facilities in those terms—right? A. Yes.

Q. On the page following are shown the facilities referred to in that description—right? A. Yes, sir.

Q. The line number is shown, the voltage, the number of circuits, and the ownership by Pennsylvania Water, Susquehanna Transmission Company of Pennsylvania, Pennsylvania [1872] Transmission Company, and Susquehanna Transmission Company of Maryland—right? A. Yes, sir.

Q. Susquehanna Transmission Company of Pennsylvania and the Pennsylvania Transmission Company are the two companies that were merged in 1939 with and into Pennsylvania Water and Power Company. Is that right? A. Yes, sir.

Q. This application we are discussing bore on the merger of those facilities into the company? A. Yes, sir.

Q. Line Number 1 is a 66 K. V. line, and that is the line that is described as running from Holtwood, Pennsylvania to Baltimore, Maryland—is that right? A. Yes, sir.

Q. And Line number 2 is also a 66 K. V. line and is also described as running from Holtwood, Pennsylvania to Baltimore, Maryland—is that right? A. Yes, sir.

Q. Those lines at times carry Safe Harbor's output down to Baltimore for delivery. Is that right? A. At times, but those two lines are most frequently used for service from Holtwood.

Q. To Baltimore. A. To Baltimore, because those are 25 cycle, three phase lines.

[1873] Q. Those two lines are tied in directly to Holtwood. They are not tied into Safe Harbor. Is that right? A. That is right.

Q. In other words, Penn Water utilizes those lines to deliver at times energy which it receives from Safe Harbor and transmits on down to Consolidated in Baltimore and also to transmit energy which Holtwood itself produces from its project. Is that right? A. Without any contractual implications, that is correct.

Q. I wanted to stay away from that.

You meant you don't know whether those lines are used in connection with items H and I. Is that it? A. I don't pretend to be able to say whether those lines are used in connection with some specific contractual arrangement, but they are used to transmit service, part of which may come from Safe Harbor and part of which may be from Holtwood and part of which may be from other sources.

Q. Such as the interchange from the Pennsylvania customers. A. Yes.

Q. Line No. 3 is shown in the application as a 66 K. V. line which is described as running from Holtwood, Penn-

sylvania to Coatesville, Pennsylvania. Is that right? A. Yes, sir.

[1874] Q. That line is the line that is used to provide the supply to the Edison Light and Power Company under that agreement which was superseded November 1, 1945—right?

A. Yes, sir. As you speaking of Coatesville?

Q. Yes. A. No.

Q. Instead of referring to the Edison Light and Power at Coatesville, we should have referred to the Philadelphia Electric Company—is that right? A. Yes.

Q. That is the line that is used to supply the requirements of the Philadelphia Electric Company for its Coatesville division under that agreement which already has been marked. Is that right? A. That is correct.

Q. And line No. 4 is described as a 66 K. V. line running from Holtwood, Pennsylvania to York, Pennsylvania—right? A. Yes, sir.

Q. And that is the line that up to the end of 1945 was used to supply the requirements of Edison Light and Power at York. Is that right? A. That is correct.

Q. And the next line, Number 5, is the 66 K. V. line running from Holtwood, Pennsylvania to Lehman Farm, [1875] Pennsylvania. Right? A. Yes, sir.

Q. And that is the line that is utilized to supply the Lancaster division requirements of Pennsylvania Power and Light Company under that contract which has been marked in this proceeding—right? A. I would say rather that is a line used to connect Safe Harbor and Holtwood over which at times energy flows, which, having reached Holtwood, may go back over a line from Holtwood to Lancaster.

Q. To meet the requirements— A. Of the Lancaster Company.

Q. To meet the requirements of the Company in its Lancaster division under the contract which already has been marked—right? A. Yes, sir.

Q. Then there is a line which is designated Number 6, 66 K. V. line which is shown as running from Holtwood, Pennsylvania to Piney Island, Pennsylvania. That is an entirely strange line to me. A. That is a little stub line running from the powerhouse to other transmission lines which take off from the island.

Q. Near the middle of the river—is that it? A. Near the middle of the river.

[1876] Q. Then there is line No. 7, 66 K. V. Line shown as running from Safe Harbor, Pennsylvania, to Lehman Farm, Pennsylvania. Is that right? A. Yes, sir.

Q. Does that line, like the other Lehman Farm line that we described, serve the same purposes we mentioned in connection with the first Lehman Farm line? A. Yes, sir.

Q. Then line No. 8 is a transmission line 110 k. v. from Baltimore, Maryland to Gunpowder, Maryland. Is that right? A. Yes, sir.

Q. What is the function of that line? A. That line carries the service of Consolidated Company from its substation in Highlandtown out to Gunpowder where it connects with a belt line owned by Consolidated running for quite a distance around Baltimore.

Q. Then we have several lines designated as running from Safe Harbor, Pennsylvania to Perryville, Maryland, of 132 K. V. In what connection are those lines used? A. Those lines are used for the 25 cycle service used by the Pennsylvania Railroad Company.

Q. That is the line to which you recently had reference which runs from Safe Harbor but is owned and operated by Pennsylvania Water and Power Company—right? [1877] A. Yes, sir.

To make it clear I think we spoke before of an extension of this line to the Safe Harbor, or near to the Safe Harbor, powerhouse. That is just a technical matter.

Q. I see.

Then, as line No. 12, a 220 k. v. line from Safe Harbor, Pennsylvania to Westport, Maryland, that line is owned and operated by Pennsylvania Water and Power Company to the extent that it is in Pennsylvania, and by Susquehanna Transmission Company of Maryland to the extent that it is in Maryland—is that right? A. Yes, sir.

Q. And that is one of those lines that is used to carry electric energy directly from Safe Harbor down to Baltimore—right? A. Yes, sir.

Q. In connection with items E, F, and G in this proceeding—right? That is the three-party contract—tripartite contract. A. Yes, sir, and in connection with any interchange, etc.

Q. That backfeed you were talking about sometimes comes up on that line. Is that right? A. Yes, sir.

Q. Then the next line is a line shown as running from [1878] Ellicott City, Maryland to Takoma Park, Maryland. That is owned and operated by Pennsylvania Water and Power Company. Is that right? A. Through the Susquehanna Transmission Company of Maryland.

Q. Is that the line that is used when deliveries are requested at Takoma Park, Maryland by Consolidated under the provisions of that three-party agreement? A. That is one of the lines. There is another circuit, also, on the railroad.

TRIAL EXAMINER: What is the K. V. in that line?

MR. GOLDBERG: 220.

By MR. GOLDBERG:

Q. Then there is a final line shown of 220 K. V. from Safe Harbor, Pennsylvania to Dundalk, Maryland. Is that right? A. Yes, sir.

Q. Is that operated by Penn Water in part and Susquehanna Transmission Company in part? A. Yes, sir.

Q. In connection with the three-party agreement, items E, F, and G—is that right? A. Yes, together with the interchange, etc.

Q. Mr. John E. Malone was one of your counsel in that case. Is that right? A. Yes, sir.

[1879] Q. And Mr. Hambright was the other? A. Yes, sir.

Q. Isn't it a fact that no mention is made in that application of joint service by any one? A. I don't see any.

Q. You don't recall taking any exception to the application at that time because no such reference was made, do you? A. No, sir.

Q. Directing your attention to paragraph "K" of the application in Docket No. 5582, was it factually correct to say that the facilities of the Susquehanna Transmission Company of Pennsylvania which are to be merged with the applicant's facilities, that is Penn Water, consist of the Pennsylvania portion of two double-circuit steel tower transmission lines extending from Holtwood, Pennsylvania, to points in the State of Maryland? A. Yes, sir.

Q. It is indicated in the next sentence, isn't it, that further particulars about those lines, lines 1 and 2, are shown on that table which you and I have just finished discussing as part of paragraph "F". Is that right? A. Yes, sir.

Q. Then continuing, was it factually correct to say, based upon your knowledge of the operations of the company, [1880] that those lines, "are at present used in the transmission of electrical energy generated by applicant and sold to Consolidated Gas Electric Light and Power Company of Baltimore and will be so used after the proposed merged is consummated." Was it factually correct to say that at that time? A. I can't say as respects the legal implications.

Q. I don't want you to. A. But otherwise that is true. However, it must be understood, naturally, that service might come back over those lines.

Q. Go back in both directions, the backfeed from Consolidated at times of low water would come up through those lines. Is that right? A. Yes, sir.

Q. When you say that you can't say legally, you relied entirely upon your lawyers analysis of the legal conclusion based upon the operating facts. Is that right?

A. I think so, sir.

MR. SPARKS: Were you relating that question to what was stated in the application, Mr. Goldberg?

MR. GOLDBERG: That is right.

By MR. GOLDBERG:

Q. Since 1939 up to and including today those lines have been used in the operating manner described in that application—right? In other words, they have been used to transmit [1881] electrical energy which is sold by Penn Water to Consolidated from Holtwood to Baltimore and have also been used to carry the backfeed. Is that right?

A. They have been used for the transmission of energy back and forth.

Q. In connection with Holtwood sales to Consolidated—right? If you don't like "sales", in connection with Holtwood's business transactions with Consolidated. A. That is so in part; yes, sir.

Q. I was wondering about that "in part". It disturbs me a little bit. What does that implication imply, that "in part"? A. That has reference to the legal aspect of the thing.

. . .

[1885] Q. MR. Walls, I would like to show you your direct testimony in the Safe Harbor case on November 1, 1944, Docket No. IT-5914, at page 36. You testified in that case, did you not, talking about the McCall Ferry project, that "It was not until 1905 that construction work on any of these schemes was actually initiated. In that year the McCall Ferry Power Company was formed and work was started on the so-called [1886] McCall Ferry (now Holtwood) Dam at Piney Island. However, the McCall Ferry Power Company ran into financial difficulties in 1907 with

the dam and powerhouse only partly constructed and had to suspend work."

You so testified, did you not? A. Yes, sir.

Q. In connection with your testimony on cross-examination about the Tailrace excavation work that was carried on in 1908, was it? A. Yes, sir.

Q. You also testified at Transcript 1371 that it was a great advantage to get that Tailrace work out of the way before the powerhouse construction started.

Do you recall when the powerhouse construction resumed?

MR. SPARKS: Excuse me just one minute. Your reference to cross-examination, Mr. Goldberg, is in this proceeding?

MR. GOLDBERG: Yes.

By MR. GOLDBERG:

[1887] Q. Do you recall when the construction started on the powerhouse? A. Started before this time. That was an ill-advised way of speaking of this matter. I should have said, "Get that Tailrace work out of the way before there was a concentration of work around the powerhouse." Actually the powerhouse construction started before 1908.

Q. You are talking about started by McCall Ferry before 1908? A. Yes.

Q. I was talking about that period of suspension when the Tailrace work was carried on. You said it was desirable because it was a good idea to get it out of the way before construction of the powerhouse started. By "started" in that instance you meant construction resumed. Right? A. Yes.

Q. I was trying to get at this: When was it resumed? Do you recall? A. It was resumed, as far as I know, in August of 1909.

[1896] Q. Was there ever any doubt about the engineering feasibility of the project? A. I don't know that there was doubt by competent engineers, but there was a great deal of public doubt, particularly in the minds of those who had been living along the river and had seen it in flood and during ice runs, and furthermore in Baltimore there was doubt expressed as to whether the dam would stand up under the impact of the river forces. That doubt, however, was largely in the minds of the lay public and also in the minds of some investors.

Q. You say the public in the vicinity of the dam had some doubts about its engineering feasibility and some investors may have had similar doubts? A. Yes, the people who lived along the river and knew its wildness would say frequently that "Wait until the next flood comes and this dam will not be here."

. . .

[1911] Q. You say Empire Engineering was engaged in performing its work when you arrived? A. Yes, sir.

Q. Was it proceeding on the basis of the old Cooper plans? A. Yes, sir.

Q. And did it continue the entire time it was on the project on the basis of the old Cooper plans? A. With such modifications as were introduced by us into those plans that were found necessary as a consequence of the development of the work.

Q. What was that? A. The design of the transformer house was one of [the] big jobs that we had very near the outset.

Q. You mean a new design or consideration of the old one? A. I think it was rather a redesign.

[1912] Q. Are you sure it was not merely a revision of the old design that had been prepared? A. Well, it was a revision of the old design in certain respects, particularly the interior of the transformer house, for I recall that we decided on a different high-tension bus arrangement, and

the employment of a different type of disconnect or high-tension circuit breaker. I think at that early date, also, I was concerned with the design of the transmission line and preparing for ordering insulators, towers, cable, and determining upon a route for the transmission line so that I might advise those concerned with acquisition of property where they should work, and what property they should acquire, which latter work was under the charge of Mr. Clarke. It was a rather hectic first few months on the job.

Q. Well, modification of design of the transformer house, concerned with the design of the transmission house, ordering insulators. That doesn't sound very hectic to me. What else was going on that involved modification? A. Auxiliary equipment.

Q. You were redesigning the auxiliary equipment, you say? A. Yes. That was in connection with the oil lubricating and purification system, the cable and wire control layouts, circuit breaker layouts, governor pump installations and piping, together with the accumulator tank arrangements. [1913] Sometime along in there, of course, there was the head and tail gate situation to be struggled with.

I can't recall now all of the many things we had to deal with promptly.

Q. I think you have done a pretty fair job of doing some recalling at that point. I wonder now if you can look at that Exhibit 90 and recall what faulty designs you were referring to at that time in the light of your reaching back into your memory a few minutes ago. A. I remember, though I don't recall at what time I gave consideration to the matter, the deflection wall, the boom piers, the track layouts to give access to the powerhouse for the bringing in of machinery at the different levels required during the construction operations. My memory indicates that I was very busy, both at Holtwood and in traveling around to the manufacturers, going over the designs to incorporate

the improvements in the art as far as it was possible, and negotiating, or helping to negotiate, additional equipment contracts.

Q. You say you undertook as one of the first things you did when you arrived in November of 1909 to study the plans that had been prepared when McCall Ferry Power Company was carrying on the work. Is that right? A. Yes, sir.

Q. What did those plans cover? A. Those plans covered the dam with its appurtenant [1914] wing walls and abutments, covered the powerhouse, I think the gatehouse and the transformer house, with machinery layout, and some layout of auxiliary equipment, but I recall that the switchboard layout was changed very materially.

Q. McCall Ferry had plans for the switchboard layout? A. Had plans, but they were changed materially.

Q. You named the dam and appurtenant works, powerhouse, gatehouse, transformer house, machinery layout, layout of auxiliary equipment and switchboard layout. Any other plans they had? A. The equipment layout would include, of course, the auxiliary equipment of which there was a great amount.

Q. That is all you can remember right now? A. All I can remember at the moment. I may be able to recall a lot more later.

Q. The plans covering the dam and appurtenant structures were the plans being followed by Empire Engineering when you arrived. Is that right? A. Yes, sir.

Q. And the plans with respect to the powerhouse were also being followed by Empire Engineering at the time you arrived. Is that right? A. Yes, sir, but they had not gotten very far ahead with those beyond putting in concrete preparatory to receiving some of the turbine parts that had to be placed first in the [1915] concrete. I refer now to draft tube parts and so forth.

[1918] A. The machinery had been ordered but there were many changes in machinery in connection with the develop-

ment of the art, among them being the thrust bearings for the generating units.

Q. That change was not made until you arrived on the scene? A. That change was not decided upon until I arrived on the scene and had consultations with the turbine manufacturer as respects the details. Now, I don't know how long before the turbine people had been trying to work out something better than the pressure type thrust bearing, but I do remember that we gave thought to the substitution of a roller bearing and made investigations as to where roller bearings had previously been used with success.

[1931] Q. Isn't it a fact, Mr. Walls, that Penn Water's generating facilities consist of the Holtwood hydro electric plant and the adjacent steam electric plant?

THE WITNESS: * * * I think that its owned facilities consist of those two generating plants together with transmission lines and other property.

Q. In addition to those sources of supply of electric energy to Penn Water, Penn Water's other sources are Safe Harbor and the interchange agreements it has with its Pennsylvania customers and Baltimore? A. That depends upon what it meant by sources.

Q. Sources of supply to Penn Water.

[1932] Q. Yes. When I say Consolidated I had in mind that that might include electric energy coming up from Potomac Electric Power Company. With that addition is my statement a correct statement?

THE WITNESS: Sources of supply to Penn Water's system, I think that is correct.

[1933] Q. But so far as Consolidated's payment is concerned, to Holtwood it is independent of the amount of energy delivered to Consolidated, the provision being that the payment made by Consolidated is to represent the difference between the revenues received by Penn Water from its Pennsylvania customers and a stipulated return over and above Penn Water's operating costs?

THE WITNESS: I would have to answer that yes and no—yes, to the first part, no to the second. The second part omits consideration of operating expenses.

[1934] Q. By "operating costs", I meant to include operating expenses? A. I think that is right. It is, of course, a very brief resume of a very voluminous contract so that there may be exceptions.

Q. Of course, the bills that are already in evidence show the steps by which you arrive at all that. A. Yes, sir.

[1955] TRIAL EXAMINER: Just a minute. I don't think it makes any difference what this witness knows or thinks about sales. It is the underlying fact to which it will be applied in the interpretation of the statute.

[1956] Q. There has been no change in the operations of Safe Harbor and Penn Water since 1932. Isn't that right? A. You mean as respects the—

Q. Physical operations? A. —flow of service?

Q. That is right. A. No, I think the flow of service has been the same in general.

Q. Yes, and it is still the same today. A. Yes, in general.

[1957] Q. But based upon your knowledge of the company's operations you never had reason to take exception

to the use of those words "sales of electric energy." Isn't that so? A. I don't remember that I did.

[1980] Q. Having examined those pages it appears, does it not, that Mr. Thomas testified in 1939 that he carried on the negotiations with respect to the agreement which has been identified in this proceeding as Items "E", "F" and "G". [1981] Isn't that right? A. Yes, sir.

MR. SPARKS: I object to the question on the ground such evidence is not material and relevant to this proceeding, and I move the answer of the witness be stricken.

TRIAL EXAMINER: Objection overruled.

By MR. GOLDBERG:

Q. Copies of that agreement had been filed with the Commission—is that right—Mr. Thomas so states.

[1982] MR. SPARKS: Objection.

TRIAL EXAMINER: Objection overruled.

THE WITNESS: Yes, sir.

By MR. GOLDBERG:

Q. And Mr. Hambright asked Mr. Thomas this question, did he not: "I believe later the Commission or somebody else asked for additional copies." Is that right? A. Yes, sir.

Q. And in response to that question Mr. Thomas testified as follows, did he not, "Yes. In November 1932, the Federal Power Commission issued its order No. 31 which called for filing the contract, and on December 20, 1932, Mr. Walls signed a letter which I addressed to the Federal Power Commission acknowledging receipt of orders—order No. 31, report on rates and services, and stating this: "This company sells electric power and energy to only two customers, namely, the Consolidated Gas Electric Light and Power Company of Baltimore and the Pennsyl-

vania Water and Power Corporation [Company] under a three-party contract dated June 1, 1931, a printed copy of which was sent to you on July 14, 1931. This agreement has been modified by a supplemental agreement dated August 1, 1932, a copy of which is enclosed. The company has no other rate schedules, tariffs or contracts.' "

He so testified, did he not?

MR. SPARKS: Objection.

[1983] TRIAL EXAMINER: Objection overruled.

THE WITNESS: Yes, sir.

By MR. GOLDBERG:

Q. Was that an accurate statement in Mr. Thomas's answer? A. I do not know that it was accurate from the legal viewpoint, and as respects technical accuracy I don't know that it was not intended that service from Safe Harbor would not flow to other customers.

[1990] Q. As far as 1939 was concerned the statements made in that letter were still correct. Isn't that so? A. I judge they were correct legally and I judge they were correct from a technical viewpoint for the purposes intended.

Q. In other words, you never felt this need for that exactitude in relation to the 1939 and 1944 rate proceedings of the Federal Power Commission with respect to Safe Harbor. Isn't that so? A. I think that is so.

Q. But you feel that need in this proceeding. Isn't that [1991] right? A. I feel that desire on my part to express the matter as accurately as I reasonably can for the purposes at issue.

[1994] Q. I am not worried about that. I want to know why it would be inaccurate to refer to sales of power and energy under items E, F, and G from your own viewpoint as an engineer familiar with all of the company's operations. A. It is not an accurate statement.

Q. It is not an inaccurate statement, is it? A. It may be considered an inaccurate statement because of the omission of qualifications. That I don't know. It would [1995] depend upon the use to which the statement will be put.

Q. But everybody knows that when you speak of sales of electric energy from an engineering viewpoint there are necessarily voltage, phases, frequency, power factor, power factor cooperation involved. Isn't that so?

A. I don't know as everybody does.

Q. Every qualified engineer? A. That term is loosely employed.

Q. You have employed it—right? A. I have employed it and I may expect to employ it that way again.

Q. Though a qualified engineer, you have employed it—right? A. Yes, sir.

Q. And when you employed it you had in mind that the sale of electric energy has certain characteristics and attributes involved, such as phases, voltage, frequency, and the other things you mentioned. Isn't that so? A. Yes, sir, unless there is some reason in my mind to make a distinction and a more accurate statement.

Q. But the statement that is made when engineers speak of sales of electric energy is an accurate one. A. For the purposes probably for which the statement is made when it is not necessary to have extreme accuracy or it is sufficient to use a phrase connoting a lot of different [1996] things.

Q. What you are saying is that it is accurate from an engineering viewpoint to speak of sales of electric energy, but to be very technical about it we should break it down into the components such as you have. Is that right? A. If there is necessity for such technical accuracy, and generally there is not.

Q. And up to this proceeding you have seen no need for this technical accuracy? A. I don't recall that I have used it before especially in any other case.

Q. Do you sell voltage? A. Not except in a very loose way of speaking.

Q. Does a customer buy voltage? A. To the extent that voltage is a component of energy, power, and the other services rendered, he may be said to buy it, but not buy voltage alone.

Q. Voltage alone is just no good to him. You can't do anything with it. Is that right? A. Generally not.

Q. It has no independent standing from an engineering viewpoint—isn't that so? There is no significance to say "voltage-period." Isn't that so?

. . .

[1997] A. A person might want voltage for a certain purpose regardless of the energy involved.

Q. That might be so, but he would have that energy in that voltage. Right? A. I am thinking somebody might buy voltage for a precipitator, for instance.

. . .

Q. I have no objection to your going ahead, even though you may think it is too technical. I would like to hear about it. A. A person may wish to secure voltage for certain experimental or other purposes, disassociated with any energy, but I would take the position that what is generally supplied is energy together with the current, voltage, and other characteristics and services, not voltage alone, not perhaps energy alone.

. . .

[2092] Q. Some of the service being supplied to Holtwood and Consolidated as described in the excerpts that are before you [2093] you say were going to the Pennsylvania Railroad. Is that right? A. No, sir. I meant that some of the electric supply derived from Safe Harbor itself, and I refer to the 25 cycle supply, was intended to go to the Pennsylvania Railroad.

Q. That supply Safe Harbor was paid for. Is that right? A. I assume so.

E

Q. And it was paid for that supply by whom? A. I assume by Penn Water and Consolidated.

Q. Pursuant to bills rendered by Safe Harbor to them. Is that right? A. I believe so.

Q. Which bills were prepared in accordance with items E, F, and G—is that right?

THE WITNESS: As far as I know.

[2095] Q. * * * There is a new agreement today between Pennsylvania Water and Metropolitan Edison which supersedes the old York supply agreement—right? A. Yes, sir.

Q. Today does any of the electric energy generated by Safe Harbor go up to York? A. I assume that it would at times.

Q. In other words, no change in the operations has occurred. You have had a change in the names of the contract, though. Is that right?

THE WITNESS: There has been no change in the operations in general so far as I know.

[2101] Q. Safe Harbor supply as it was under the old contract is today still available under the pool. Is that right? A. Yes, sir.

Q. I want to direct your attention to Section 3 of Article 4 of that contract, which is Exhibit 72 in this proceeding, and I want to read to you a portion of Section 3 as follows: "Holtwood shall supply to Metropolitan, and Metropolitan shall receive, hourly amounts of firm energy equal to the hourly integrated generation of Holtwood and Safe Harbor in excess of 50,000 k. w. h. per hour multiplied by the ratio of Holtwood's firm power obligation to Metropolitan as specified in Section 1 hereof." That is as far as I am going to read, Mr. Walls.

From an engineering standpoint what does that mean?
A. It is difficult to make a resume of it, but I would say in part that it means that there shall be held available a [2102] supply of electric service to Metropolitan to be limited in certain numerical fashion, as indicated here.

Q. How did Safe Harbor get into that picture? I don't understand that. From an engineering viewpoint how does Safe Harbor fit into it? A. Did I say Safe Harbor?

Q. No, but Safe Harbor is mentioned in there. The formula apparently is dependent upon the generating facilities of Holtwood and Safe Harbor. Is that it? A. That is true.

Q. That is the reason for the reference to Safe Harbor. Is that right? A. I don't think I mentioned either company.

Q. I know you didn't, but I am trying to find out why is there the reference to Safe Harbor and Holtwood? From an engineering viewpoint where does Safe Harbor fit into that picture? A. It was necessary to bring Safe Harbor into the picture in order to determine the limitations of service which Metropolitan could call for.

. . .

[2103] Q. In other words, Holtwood at times utilizes the supply available from generating facilities of Safe Harbor to meet its firm power commitments under the new contract with Metropolitan Edison, and that is why the reference is there in Section 3 of Article 4, to Safe Harbor and Holtwood—right? A. That may be.

Q. That is the fact, isn't it, Mr. Walls? [2104] A. I would have to give that further thought to make sure of that.

Q. Isn't that what you just told us before, just preceding this last question of mine? Perhaps we had better have my question read. A. I think it would be better.

(Previous question read.)

By MR. GOLDBERG:

Q. Do you wish to expand on that answer, Mr. Walls? Isn't the answer to my question "Yes"? A. I think it is.

. . .

[2126] Q. When Consolidated's entitlement of two-thirds does not flow to Consolidated, it does not do so because in accordance with a desire to obtain the maximum economy from the operation of the pool it may be dispatched to other load centers to meet the requirements of Consolidated and Holtwood's customers. Is that it?

. . .

MR. SPARKS: May I ask a question, Mr. Goldberg? When you say, "It does not do so", do you mean there the reason it does not do so is, and so forth?

MR. GOLDBERG: Yes.

MR. SPARKS: Thank you.

THE WITNESS: I would say that is true, adding, however, the words "and Safe Harbor's customers, including the Pennsylvania Railroad."

By MR. GOLDBERG:

Q. Has Safe Harbor derived any revenue from sales by it to the Pennsylvania Railroad? A. Not directly, no, sir.

Q. Has it ever derived any revenues from sales to Metropolitan Edison Company, Philadelphia Electric Company, and Pennsylvania Power and Light Company?

. . .

[2127] THE WITNESS: I don't think so.

By MR. GOLDBERG:

Q. Did it render any supply of energy to the Pennsylvania Railroad in 1935? A. I think it furnished supply to the Pennsylvania Railroad in 1935, at least during a portion of that year.

. . .

[2167] Q. Mr. Walls, did you ever see the term "Flow of electric [2168] service" in a contract? A. No, sir, I don't think I have.

Q. Did you ever use that term prior to this case? A. I think I have given thought prior to this case as to distinction between electric service and electric energy, but I do not recall using it formally.

Q. What do you mean by "Formal"? A. In any contracts or statements that would be more than communications between myself and my associates.

Q. In speaking of the operations of the company in the past isn't it a fact you have spoken of it in terms of sales of electric energy? A. Yes, sir, I used the expressions that I thought would be understood by those to whom I was addressing my remarks.

Q. Did you use that phraseology when you talked to lawyers? Is that it? A. Which phraseology?

Q. "Sales of electric energy". A. Yes, I do at times.

Q. Did you use it when you talked to your engineering associates in the company? A. I have often done that.

Q. Used it when you spoke to your accounting associates in the company? [2169] A. I have often done so when there was no necessity of being particularly accurate as I wish to be in this case.

Q. You did not think you were being inaccurate when you spoke to them about sales of electric energy, did you? A. No, sir.

* * *

[2188] Q. * * * Did you consider that the tailrace excavation work that was carried on by McCall Ferry Power Company and Pennsylvania Water and Power Company was necessary? A. It was necessary in the sense of being desirable in order to increase the effectiveness of the Holtwood plant by increasing the head available at that plant.

Q. In other words, as you cut a deeper tailrace you

add a certain amount of head to the plant. Is that it?
A. Yes, sir.

Q. And the amount of head available to a hydroelectric plant has a bearing on the economy of operations of a hydro [2189] plant. Is that right? A. It has a bearing upon the total amount of power and energy that can be derived from the plant, for instance, in a 50 foot head plant one foot of additional head would increase the energy and power by two per cent, but furthermore the capacity that would be obtainable from the same sized turbine would be greater than two per cent.

Q. Is my information correct about this: Tailrace excavation work was started by McCall Ferry Power Company, was carried on to some extent in 1908, and was completed by Penn Water after November 1, 1909. Is that right? A. I wouldn't say it was completed. Rather this way: That the bulk of the work was done before 1909. Considerable additional amount of work, but small relatively to the earlier work, was done about 1913 or 1914. Then a little additional work was done at a later period, with still a possibility of doing some more.

. . .

[2192] Q. Was the work which was carried on in the early days on tailrace excavation in 1908 and 1909 successful?
A. Yes, sir.

. . .

[2198] Q. What does the flashboard add? A. Flashboards are about 4 feet 6 inches or 4 feet 9 inches high. The water is not always carried up to the top of the flashboards or sometimes we allow it to overflow the flashboards a little to get additional head rather than to save the water. So conditions vary there.

Then if there is a prospect of a freshet coming down the river and we know in advance, or are able to estimate in advance when that discharge will arrive at Holtwood, we

may draw down the water in advance of the freshet even though that would not be in accordance with the usual weekly draw down. So the head is constantly varied.

Q. You usually up there speak about 52 to 56 feet with the flashboards? A. That is a good range.

* * *

[2199] Q. Isn't [it] a fact that the available head of the Holtwood plant has decreased since 1916? A. No, I wouldn't say that as a general thing. I would rather be inclined to say that it has decreased some by reason of Conowingo backwater.

Q. It has decreased some? A. Has decreased some by reason of Conowingo backwater, but it has increased some after the construction of Safe Harbor because Safe Harbor and Holtwood are endeavored to be operated as a unit for the best utilization of the river discharge and the heads available at the two plants, so that sometimes it is found desirable to increase the head at Holtwood by proper manipulation of discharge through Safe Harbor and sometimes water is stored above the Safe Harbor Dam perhaps decreasing the head at Holtwood more than would have been the case had Safe Harbor not been constructed.

[2200] But on the whole I think that the effective head at Holtwood has been increased.

There is another reason for that deriving from the fact that by manipulating the discharge from Safe Harbor we are able to restore flashboards on the crest of the Holtwood dam more promptly and so extend the useful period of those flashboards.

Q. You mentioned the decrease of the head in connection with construction of the Conowingo project below Holtwood. Because of that decrease in the head available at Holtwood through construction of the Conowingo project I am correct, am I not, in stating that certain payments are made by Conowingo to Holtwood, for loss of the benefits of that head; is that right? A. Yes, sir, certain payments

are made by Conowingo which have to do with permission to Conowingo to flood back, and an effect of such flooding back is to decrease it, you might say, effective head at Holtwood, * * *

[2223] Q. Did you have any trouble with the design of the transmission line? A. I don't recall any trouble with design; no, sir.

Q. Were the plans for the transmission line prepared after November, 1909? A. Yes, I am sure of that because I, myself, made up the original design and I think we were taking up the matter of insulators at least early in 1911, and the design of the tower would have had to be determined upon in general before we could have determined upon the types of insulators to be used.

Q. You said early in 1911. You meant early in 1910? A. 1910. Thank you.

[2224] Q. When you said that you, yourself, had designed that transmission line I remembered the other day you had said that was one of the things they were in a hurry for and that is why you put your attention on that? A. Yes, sir.

Q. Had any designs at all been prepared for that transmission line by McCall Ferry Power Company that you remember? A. I don't remember of any.

[2227] Q. Did you also design the substation at Baltimore? A. The general design, yes, but of course not the details.

Q. Were there detailed designs available from McCall Ferry Power Company or was that also done by your force? A. That was done entirely by our force.

Q. I suppose because of its association with the transmission line the design of the substation was one of the things that was gotten to pretty promptly after November, 1909, after November 1, 1909? A. I think that a general

design would have had to be determined upon pretty early, and I think that we tried to design that station so that it would be somewhat similar to the transformer house at Holtwood. But I think we were delayed in getting the property and then could not complete the designs in all detail until we got the property.

Then, as I say, after we got the property we found the quicksand situation.

. . .

[2232] Q. This morning, Mr. Walls, we spoke about the flashboards on the dam which increased the head. Are those flashboards generally of the same type which you had there at the dam in 1911? A. No, sir. We did a lot of experimenting with flashboards. Flashboards had been in use for quite a number of years, but in our situation we had to be very particular to have flashboards installed that would release quite accurately at a pre-determined water flow because we thought we should be sure that we would not flood back beyond our riparian rights. So we experimented with a number of different types as opportunity afforded, and finally developed the type of flashboard now in use.

Q. You say a pre-determined water flow was necessary, rather than the flashboards would go out at a pre-determined [2233] water flow. That was true in 1911. Is that right? A. Yes, sir.

Q. Are we to understand that in 1911 the type of flashboard you were using would not go out at the pre-determined water flow? A. They were irregular in their action and therefore we feared that such irregularity might cause us to flood back upon the property over which we didn't have releases, and at that time we were threatened with suits in connection with encroachments upon property by our backwater.

Q. What was there about the flashboards you were using in 1911 which made them irregular in their action? A. We didn't know how the pins would act.

I recall that some of the pins would bend very slowly, whereas for reliability of action pins that will either break or release quickly would be desirable.

For instance, a pin might bend to a 45 degree angle and then hold up there. It would take a considerably greater head of water than we had estimated or we desired to bend the pin over flat. So we tried different kinds of steel. We tried notched pins, and we tried also various devices other than pins. Wicket or butterfly gates and quite a number of devices were evolved, some of which were tried on the dam and some of which were tried elsewhere, I think in a little channel between Piney Island and Holly Island.

[2234] Q. So it was the reaction of the pin to the pressure of the water which was the drawback in 1911. Is that it?

A. That and of course we made improvements in the panels themselves. We also had to learn how to handle the flashboards sometimes to be able to remove them, but more particularly to be able to reinstall them at the earliest possible moment with water flowing over the crest of the dam.

We don't have to be that particular now because we can hold back water for a little while at Safe Harbor and get a dry dam crest to work on.

Q. With respect to handling of the flashboards, that was a matter of operation—right? A. That was a matter of operation, but it was also a question of design.

Q. You mean the type of design of the panel determined the method of operation of the flashboard? A. Yes, for instance, I think we had strap irons fastened vertically to the boards. The strap iron formed a loop at the top of the boards for handling.

It is my impression we tried out a number of different kinds of strap iron arrangements. We tried using sills, wooden sills on the crest of the dam in order to make the flashboards more easily seated so that they wouldn't leak so much.

Q. What were the panels of the flashboard being used [2235] in 1911 made of? A. I think either 1 inch or 1½ inch boards fastened together.

My impression is that they were fastened together with wooden vertical pieces, but that I am not quite sure of. I believe they were wired to the pins and we used manure and sawdust for tightening them.

Q. When you said you made improvements in the paneling what did you have in mind? A. I don't remember the various steps we went through but I think it was a question of the length of the panels which had to be determined with the view of being able to handle them more readily.

The shorter the panel the easier it would be to handle when water was going over the dam, that is to say it would be easier to install it. On the other hand shorter panels meant more vertical joints that would have to be caulked. If the panels were not rigid enough they would bend under water pressure and leak.

Q. These improvements of which you speak came about as a matter of your operating experience with the panels you were using. Is that it? A. I would say it was this way: The panels weren't accurate enough in their operation to suit us so we designed this and that alternative and tried these out under operating [2236] conditions. Also we tried them out under test conditions as I have indicated before.

Q. When you say that the panels you were using in 1911 were not accurate enough in their operation to suit you, does that mean that they actually failed to perform their function? A. No, I meant by that both panels and pins together. But they were not accurate in their point of release as respects the height of the water and there was question, also of getting the kind of flashboard that would be cheapest to handle that would be capable of being tightened with the least trouble and expense and that would release uniformly.

One of the troubles we had was that the panels might release, say, over a thousand feet of the length of the dam and leave the panels standing on the balance of the dam, whereby the water would discharge over the section where the flashboards had released and would be retarded over the other section, giving backwater that was undesirable.

Q. Had that actually happened at times? A. Yes, sir.

[2237] Q. All right. A. Then there was one type we experimented with which was very satisfactory in certain respects. We found difficulty with it because the operation of these flashboards would at times be interfered with by trash floating in the river. This was the type that we called the butterfly flashboard where we could release a long line of flashboards by releasing the end one and the other flashboards would drop out consecutively like cards falling one after another. But the difficulty was that the openings would be clogged up. These flashboards were also satisfactory with regards to easy replacement but we had to abandon them finally because of the trash consideration.

Q. But generally speaking isn't it fair to say that the flashboards in use today are of the same type that were in use in 1911? A. Of the same general type, yes.

[2292] Q. Before the 1931 agreement between Consolidated and Holtwood was entered into which we know in this proceeding as Items "H" and "I", what did Holtwood sell to Consolidated? A. Holtwood sold electric service.

Q. Just as they do today. Is that right? A. Holtwood also sells electric service today.

Q. You have mentioned earlier in this proceeding that it was your recollection that Safe Harbor was named in the agreements which are identified in this proceeding as 71, 73 and 76, for tax purposes. Do you recall that? A. Yes, sir.

Q. Naming Safe Harbor in those agreements for tax purposes had no bearing on the question of service being

rendered by Safe Harbor. Isn't that so? A. I think that it did not have any bearing.

Q. Is it your recollection that there was some advantage to be gained in lower income taxes if Safe Harbor were named in those contracts?

MR. SPARKS: Did you say income taxes, Mr. Goldberg?

MR. GOLDBERG: Or other types of taxes.

THE WITNESS: I think that it was thought that advantage would be gained perhaps at the time or perhaps later on—that [2293] I don't recall.

By MR. GOLDBERG:

Q. Was the advantage solely in relation to income taxes or other types of taxes? A. I think gross receipts tax was an element taken into consideration.

Q. Is that a federal gross receipts tax or state? A. I think it was a state tax.

. . .

Q. Yes. What state did you have in mind—was it Maryland or Pennsylvania, or both? A. I think it was Pennsylvania.

. . .

Q. If Safe Harbor were not named in Exhibits 71, 73 and 76, which I place before you, would that have any bearing upon the operations of Safe Harbor?

. . .

[2294] THE WITNESS: I don't know whether it would have any contractual bearing but I don't believe it would have any bearing upon the furnishing of service from a technical viewpoint.

By MR. GOLDBERG:

Q. Yes. That is what I had in mind. In other words, physical operations? A. Yes, sir.

. . .

[2300] Q. Who schedules the generation of Safe Harbor?

A. That is the result of a number of decisions, deriving in part from the desires for service of, let us say, Consolidated, Pennsylvania Railroad, Washington, and electric groups to the north.

As a consequence of such demand for service the load dispatchers at Baltimore in the employ of Consolidated and Holtwood determine upon that allocation of service that it is [2301] hoped will be most advantageous from the viewpoint of coordination of the facilities of Safe Harbor with the other facilities available through interconnection, etc.

Q. Those load dispatchers that you referred to, they schedule the operations of all other plants on the interconnected system, including the hydro at Holtwood and the steam at Holtwood and the steam at Consolidated. Isn't that so? A. They control more precisely the operations at Safe Harbor and Holtwood, while Consolidated, a little more precisely, controls its own steam operations. But these three sources with others must be coordinated so that the load dispatchers actually consider the situation as a whole.

Q. In other words, when there is a demand from the electric groups to the north—and by that I take it you mean the Pennsylvania firm customers we have talked about in this case—

A. Or the interconnected customers.

Q. When there is a demand from them the load dispatchers look at the integrated system as a whole, and in view of the operations to derive the maximum economy schedule for generation to supply that demand for the north the cheapest source of generation at that time. Is that right?

A. It is not only economy. For instance, of particular importance during the war time was the maintenance of the [2302] maximum amount possible of stored water so that at times it would have been more economical to draw on that stored water with the prospect of replacing it later from a freshet or over the week end. But consider-

ations such as that sometimes enter to cause deviation from mere economy considerations.

Q. Ultimately, however, it is a long range economy consideration which brings it about. A. I think that is a fair statement.

Q. Rather than a shorter range economy program?
A. Yes, sir.

[2304] Q. We do know, don't we, that Safe Harbor has no direct connection with the facilities of Consolidated or Pennsylvania Power and Light Company and Philadelphia Electric Company, Edison Light and Power Company and [2305] Metropolitan Edison Company. Is that right?

A. I think that is true as respects physical connection.

Q. Or with the Pennsylvania Railroad? A. Yes, sir.

Q. The only direct connection, direct physical connection, that Safe Harbor has is with the facilities of Holtwood. Isn't that so? A. Yes, sir.

Q. When Safe Harbor's generation passes off Safe Harbor's facilities on to the facilities of Holtwood, Safe Harbor no longer has anything to do with the disposition of that energy. Isn't that so? A. That is a little difficult to say. Technically that transmission is practically instantaneous.

Q. I realize that when there is a load at one end there is generation at the other. A. Yes, sir.

Q. But nevertheless the flow of the supply from Safe Harbor on Penn Water's facilities is controlled by Penn Water. Isn't that so? A. You mean controlled contractually or from an operating standpoint?

Q. From an operating standpoint. A. I would say that it is controlled by all of the equipment that is physically connected, not only Safe Harbor and Holtwood's equipment, but the equipment of such companies [2306] as Metropolitan Edison and perhaps Philadelphia Electric, because the path over which the service flows depends not upon the generating source alone but upon the inter-action

of the equipment of the receivers. For example, supply intended for the North might flow in part over the circuit to York and in part over the circuit running north towards Harrisburg on the east side of the river. That division isn't in the hands or control of either Safe Harbor or Holtwood alone, but depends upon phase relations, voltages and so forth, a part of which are in the control of all of those connected physically to the system.

. . .

[2315] Q. For purposes of this question I want you to assume, and not to pass upon the legal interpretation, that the Federal Power Commission in this case will have the power and authority not only to direct what rates are to be charged but will have the authority to require rewriting of any contracts in accordance with what it deems to be the facts.

Now, then, with that in mind, suppose the Federal Power Commission at the end of this proceeding orders Exhibits 73 and 76 to be rewritten to eliminate Safe Harbor from those agreements, would you say that such elimination of Safe Harbor would prevent Penn Water from rendering the service required under Exhibits 73 and 76?

. . .

MR. SPARKS: I assume you are speaking from an operating standpoint, Mr. Goldberg?

MR. GOLDBERG: Yes, physical operations.

THE WITNESS: As respects reliability of service, I don't believe there would be any loss.

. . .

[2316] Q. In other words, the operation of Penn Water and Safe Harbor would continue just as they are today?

. . .

A. Yes, sir.

. . .

Q. Can you make energy available to customers without voltage? A. No, sir.

Q. Can you make it available to them without phase?

A. Not except in the sense of direct current.

Q. Can you make it available to them without frequency?

A. Not except in the sense of direct current.

Q. Can you make it available to them without power factor?

A. Not except in the sense of direct current.

Q. Can you make it available to them without proper [2317] number of phases?

A. Not except in the sense of direct current.

Q. Can you make it available to them without electric power?

A. No, sir.

Q. Do Safe Harbor and Holtwood have any direct current sales?

A. No, sir.

Q. When we were talking about scheduling of operations by the load dispatchers, they schedule those operations looking at the total system load; don't they?

A.

Looking at the total system load and the details, also.

[2320-A] Q. Did Pennsylvania Water and Power Company at one time investigate the possibility of building a roller dam at Holtwood?

A. Yes, sir.

Q. Will you, for my sake and for the sake of the record, tell us what a roller dam is?

A. A roller dam is a contrivance designed to be placed on the top or crest of an overflow dam for the purpose of raising the level of the water above the dam. The roller dam rolls on inclined guides so that it may be rolled up out of the way to permit flood water and ice and trash to pass underneath it, or it may be raised up a few feet to let water pass in limited amount.

It was investigated with the thought that it would give a greater head than would be safely obtainable from the use of flash boards, but the idea was not carried out and later on, when Safe Harbor was planned, the back water from the Holtwood dam was designed to extend up to the tailrace of Safe Harbor.

A roller dam, you might say, would look something like a huge rolling pin that would roll up out of the way.

Q. Did I understand you to say that the idea was abandoned after investigation had been made of it? A. It was abandoned after it was decided to locate Safe Harbor, as was done, but for a number of years prior to that [2321] the thought of eventually installing a roller dam remained with us. It is not entirely out of the question that it might not be desirable to install later on a roller dam at Holtwood, but of a less height than originally was contemplated so that we might do away with the flash boards which are difficult to manipulate.

Q. This investigation of roller dams was started by Allner as early as 1912. Isn't that so? A. Yes, sir, that was at the time when we were considering different types of flash boards and different sorts of devices. It has merits even today.

Q. All right. A. That grew out of the lack of head gates, or flood gates, on the Holtwood dam such as have been installed at Safe Harbor and as were installed at our suggestion at Conowingo Dam.

Q. Did Pennsylvania Water and Power Company make an investigation for storage reservoir sites at Holtwood Dam during early years of operation? A. Yes, sir.

Q. Do you remember when those studies were made? A. I think they were started, or at least were in operation, in 1911. I think we thought of it nearly from the beginning because we had been doing similar work in Canada, and naturally our attention would be drawn to the possibilities of doing something of that sort in Pennsylvania.

Q. The idea, however, was given up. Is that right? [2322] A. It was given up temporarily. Investigations were made and later on we acquired some property suitable for a dam site on the Raystown branch of the Juniata River, but eventually, at the request of one of our then customers, we turned that property over to that customer for eventual use by their customers. A development at Raystown is still being considered by the Federal Government.

Q. But as far as Penn Water is concerned the idea was abandoned a long time ago, that is the idea of storage reservoir sites which were investigated in the early days? A. No, I wouldn't say that, because even in recent years it was with some regret that I look back to our turning over that dam site to a company which did not develop it. I think there is still a possibility there.

Q. Nothing definite? A. No, but computations have been made of the type of construction that might be suitable there and estimates of cost were made and also estimates of the possible beneficial effects to plants further down the stream. That has been done even in recent years. ◊

. . .

[2379] Q. Wasn't that because Safe Harbor renders no service under Exhibits 71, 73 and 76? A. I don't know because Safe Harbor does render service to the other companies.

Q. Does it have any rates or charges for those services? A. Not rates and charges, no, but it render service.

Q. Does it render such services free of charge? A. I judge not.

Q. Where are the rates or charges for the services Safe Harbor renders? A. I don't know.

Q. Has it ever received any payment for those services? A. Payment from whom?

[2380] Q. Pennsylvania customers under Exhibits 71, 73 and 76? A. No. I am speaking of services here in the technical sense.

Q. To include electric energy. A. To electric service which has such attributes as electric energy, etc.

. . .